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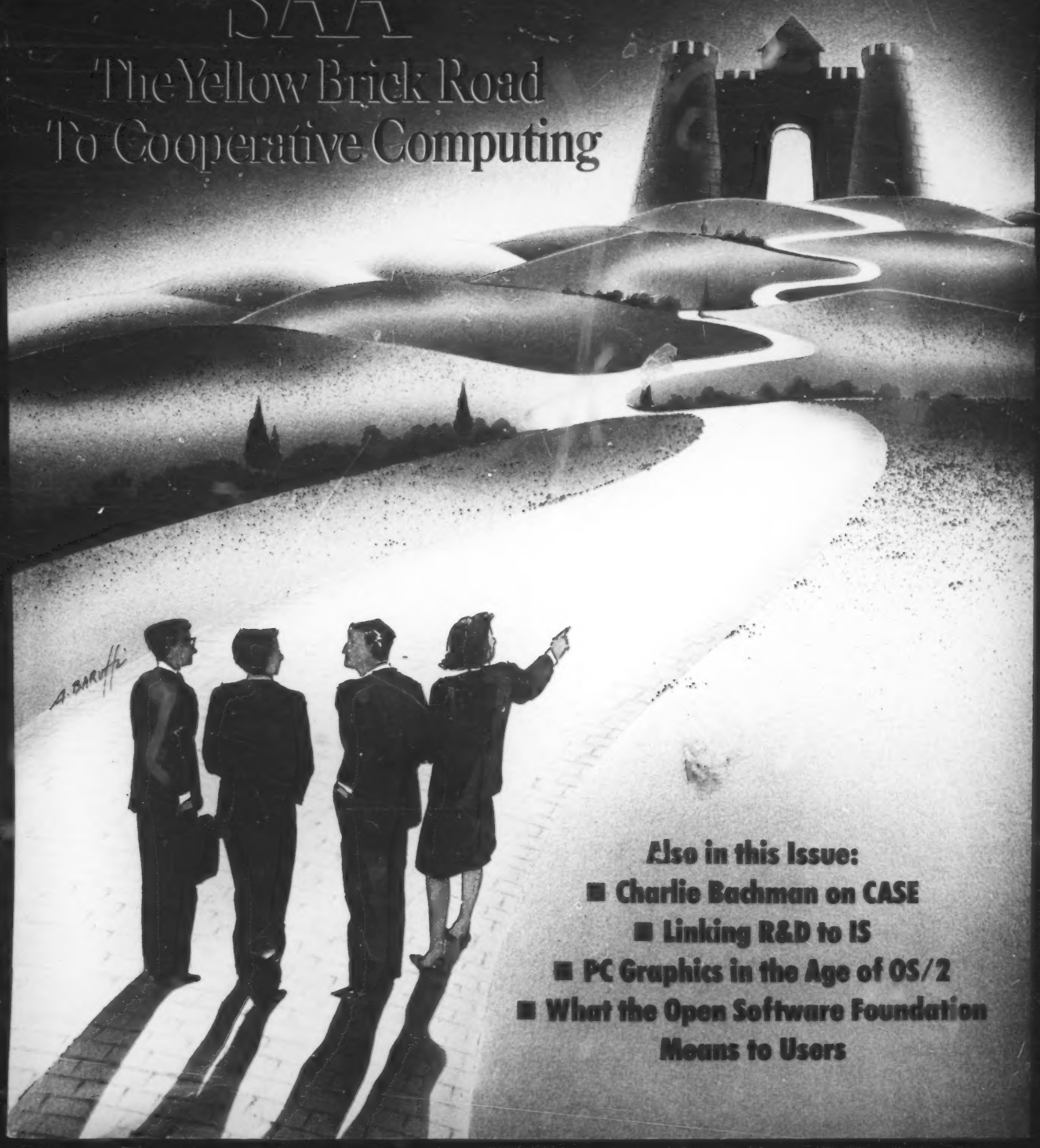
SAA
The Yellow Brick Road To Cooperative Computing



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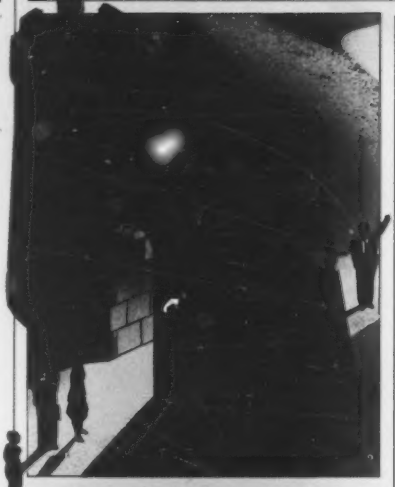

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Cover illustration by Andrea Baruffi

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Editorial

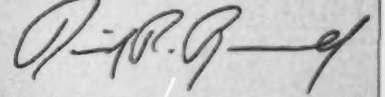
Taxation Without Representation

The Open Software Foundation's stated goal of an open software environment that would enable a user to implement software and hardware from many vendors would seem almost like an appeal to motherhood and apple pie. Who could not be in favor of open environments, standards, and freedom of choice in selecting elements of an information system? But as we reflect upon OSF, its stated goals, and the reasons for its formation, two concerns come to mind that considerably dampen our enthusiasm for this new enterprise.

"Openness and portability"—the two chief objectives of OSF—certainly would provide benefits to both users and vendors, but they go only part of the way toward fulfilling what you, the user, really wants and needs: integrated computer environments to run your business efficiently and seamlessly. OSF—and the industry—are still a long way from this plateau, which can be reached only via a crucial working alliance between users and vendors.

Which bring us to our second and perhaps most troubling concern about OSF. Apart from the competitive battle between OSF members and AT&T and Sun over the direction of Unix, the fact that OSF was formed without the participation of any users or user group organizations causes us deep concern (see "User Group Chiefs Lukewarm About the Impact of OSF," p. 19). How can OSF's founding members—Apollo, Groupe Bull, Digital Equipment Corp., Hewlett-Packard, IBM, Nixdorf, and Siemens—claim they have a mandate from customers to create an open software environment when the very people they purport to serve had no say in the creation of OSF? If the goal of OSF is to free users from the colonial world of machine and operating system dependency, will it please explain why it has set its agenda and decided what technologies it will consider for its architecture without the input of the people whose needs it claims to represent? If OSF isn't careful, it could give rise to a high-tech cry from users equivalent to "No taxation without representation!"

But herein lies an opportunity. OSF should actively seek user participation. Just saying anyone is invited to join the organization isn't enough. Actually making it possible would be a major stride toward establishing the credibility it has taken for granted. In the end, OSF may not be as acceptable as apple pie, but it certainly could avoid starting out half-baked.



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Letters

Copyright Wrong

I read with interest Mary Jo Foley's article, "A Small Software Firm Takes on Uncle Sam—and Wins" (April 15, p. 26). I am a lawyer who practices in the computer law area, and I write to correct a statement that appears in her article, which easily could be misunderstood.

Ms. Foley writes of the case, *BV Engineering Professional Software* v. *University of California at Los Angeles*, that BV Engineering lost "due to an existing law whereby institutions under state government cannot be sued for copyright violations." This is mistaken in at least two respects.

First, it implies that one could look under U.S. or California statutes and find a law that prevents suits against state governments for copyright violations. In fact, the decision in BV Engineering was based on the 11th Amendment to the United States Constitution, which is presently interpreted by the court to prevent suits for monetary damages against states or state instrumentalities (such as UCLA) in federal court, unless either the state consents to the suit or the federal statute specifically provides for a cause of action and recovery of damages against states. With respect to BV Engineering, because the state did not consent to the suit, and because the Copyright Act does not state expressly that states may be sued for damages, the federal district court felt constrained to rule that BV Engineering could not recover money from UCLA.

Second, as indicated above, the holding in BV Engineering concerns suits to recover money. Basically, the 11th Amendment has been interpreted to preclude actions against states that may require the payment of funds from state resources. It does not necessarily preclude suits for injuncture relief. Thus, even though BV Engineering could not recover money damages, it might have been able to obtain an order from the court prohibiting the state officials from making further copies of the software.

HOWARD G. ZAHAROFF
Brown, Rudnick, Freed & Gesmer
Boston

A Different Benchmark

The May 1 Software section (p. 87) contains a story on a new release of an SQL-based DBMS from Sybase. In this item, which also discusses performance, you say that Sybase uses the TP1 benchmark, "also known as the ET1 benchmark."

Both the ET1 and TP1 benchmarks use the same Debit/Credit transaction profile. But because their implementations are quite different functionally, the results obtained from these two benchmarks are not comparable. For example, when running the variation of the Debit/Credit benchmark used by Sybase, Tandem Computers doubled the number of transactions per second compared to Tandem's full-function implementation made public in March 1987.

DAVID W. DEMPSEY
Manager of Product Marketing
Tandem Computers Inc.
Cupertino, Calif.

Newer and Improved

In "Pc Word Processing: The Era of New & Improved" (May 1, p. 75), your abbreviated list of word processors listed PFS Write as available from Software Publishing. As a contented user for several years of programs supplied by Software Publishing, I feel qualified to point out that PFS Write was replaced about a year ago by PFS Professional Write and this is currently being released in a newly upgraded version.

ROBERT G. FREIBURGER
MSI Insurance
New London, Wis.

Regarding the story "Pc Word Processing: The Era of New & Improved," your "short list" of word processing suppliers omitted the company that produced the word processor rated number one by Datapro Research Corp., an independent rating lab, last year. The company is Informix Software (formerly Innovative Software) and the product is the Smart Word Processor. The Smart Word Processor is available in MS/DOS, Unix, and Xenix—both 286 and 386—operating environments.

PAUL S. BRUSKI
Director of Public Relations
Informix
Menlo Park, Calif.

Correction

It was incorrectly reported in Look Ahead (May 15, p. 11) that IBM Deutschland would have a layoff of 500 jobs this year, following a 1,200-job loss last year. While work force totals have dropped from 1985 to 1987, the reductions have come from a combination of controlled hiring, normal attrition, and early retirement, an IBM spokeswoman says. DATAMATION regrets the error.

In Search of Synergy

Linking R&D Computers to Corporate IS

KIMBRELL OF MARION LABS: Systems strategies cross division boundaries.

Computer use in R&D labs is on the rise, and links between R&D systems and corporate IS are beginning to take shape. Some companies have established physical links between VAX networks on the R&D side and SNA networks on the commercial side; others have settled for dotted-line organizational links between the two sides. Distributed processing networks may help bring the two environments closer. But synergy between IS and R&D is still the exception, not the rule. Many R&D managers express fear that IS, with its roots in accounting systems, will stifle R&D innovation.

BY DAVID STAMPS

Historically, the corporate research lab has always been totally segregated from other units within the corporation. Now, however, as companies find themselves required to make split-second responses to market currents, many are moving to crack open the previously isolated ivory tower's doors, tap the invaluable R&D data, and pass it on to other company divisions—and even beyond.

Integrating research computing with other corporate information systems can be a tortuous process that has to overcome ingrained cultural differences. Nevertheless, progress at some leading firms is increasingly apparent. At Marion Laboratories Inc. in Kansas City, Mo., for example, the formula for a new drug, along with engineering process control data, is passed directly from a computer in R&D to systems in manufacturing. In addition, because extensive testing is required before the product can be marketed, similar information is transferred directly to a database in sales and marketing. There, it is used to create educational materials for physicians who will be testing the drug.

At Federal-Mogul Corp., a Detroit auto parts manufacturer, R&D has developed an analysis program for main bearing performance. When one of the firm's automaker customers is designing a new engine, the quickest way to determine which bearing will work best is to transfer engine specifications, via the corporate mainframe, to Federal-Mogul's R&D lab, where the specs are run through the analysis program.

"The pure research people can perhaps get away with a separate environment for a while longer," says Alan Porter, associate professor of industrial and systems engineering at Georgia Institute of Technology in Atlanta. "But [for] the product development people, it's recognized as critical that they need to share databases with engineering and marketing. You can't leave designers off in the lab and then worry later about making the product meet with manufacturing or customer needs."

Porter is co-conductor of a 1986

Photograph by Hank Young

survey that explored computer use in 158 U.S. industrial R&D labs. The survey found that computer use has increased rapidly: in 1972, only 8% of R&D professionals used computers; by 1984, the percentage had ballooned to 42%; and, in 1986, it was up to 55%, fueled by the popularity of powerful pcs and workstations. Porter predicts that the next phase in R&D computer use will be "the creation of a computerized environment."

R&D Should Retain Control

Judging from the attitudes of many R&D managers, however, any computerized R&D environment would have only limited connections to commercial IS. Seventy percent of the R&D managers polled in the Georgia Tech survey say R&D has control over its own computer operations. And most say they would prefer to keep it that way.

Says Porter, "R&D believes it has to maintain control of its own computing destiny. The needs and perspectives of financial and accounting personnel in general management are just too different from those of R&D."

WALLER OF AMOCO: Successful companies control their computing.

That is not to say that cooperation between IS and R&D is nonexistent. But, except for efforts at some firms that have taken steps to tie finance, manufacturing, and scientific computing into a single "enterprise architecture," cooperation between IS and R&D appears to be minimal.

Says Donald Peterson, director of information systems at Ecolabs, a Minneapolis-based manufacturer of cleaning products, "R&D systems are pretty much a roll-your-own affair. We [IS] offer some advice and guidelines, so R&D can be part of our network if they choose. For the most part, they don't. Intuitively, though, I feel there are advantages to establishing some links between R&D, manufacturing, finance."

Tony Ossanna, director of technology support services at Ecolabs, sees things somewhat differently. "If there were appropriate support people in IS, we'd work with them, but there aren't and I don't foresee that there will be at any time soon. Their orientation is toward financial applications. They don't have the scientific and engineering background needed for our problems."

Differences Are Rooted in the 1970s

The reason R&D and commercial systems maintain their separate lives can be attributed to three basic differences: hardware, software, and cultural.

On the commercial side, the 370 architecture and its SNA architecture prevail, while on the scientific computing side, Digital Equipment Corp., Hewlett-Packard, and other vendors' minicomputers have predominated.

In the 1970s, while other user organizations tended to rely on IS for technical guidance, R&D, because it had the scientific wherewithal, tended to take responsibility for its own computer system. In the late 1970s and early '80s, full-blown scientific computing networks grew up completely apart from corporate IS. With the dramatic increase in distributed computing resources, such as relational databases, more powerful

Photograph by Mark Moore

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workstations, and more easily transportable code, generic systems are now showing up in both environments.

"The effect," says Michael R. Waller, vice president of research at Amoco Production Co., "has been a much more homogeneous environment . . . . a blurring of the distinction between scientific research computing and traditional business computing."

In some respects, the systems gap may have been little more than a manifestation of the enduring cultural difference between science and the "more corporate" side of U.S. companies: accounting, sales, and marketing.

As with most cultural differences, this one has a rich history. For example, at Sun Refining and Marketing Co., Marcus Hook, Pa., Sheldon Thompson, director of applied R&D, recalls the days before the department had its own DEC computer center and had to rely on the corporate data center in Dallas to run its number-crunching applications.

"It's not that the commercial people weren't supportive . . . they just didn't understand our applications," he says.

Most Important Applications in Industrial R&D

Application	Percent of Mentions Each Survey Year						
	1974	1979	1982	1984	1986	Projected 1987	Projected 1991
Statistical Analysis of Data	25.5	25.6	21.1	21.1	15.7	11.7	4.2
Lab Automation/ Data Gathering/Process Control	13.3	17.2	16.3	19.7	17.8	16.3	13.5
Database Management, Storage, Retrieval	8.5	12.6	12.7	16.1	15.2	15.3	9.8
Modeling and Simulation	17.0	14.9	17.5	14.6	13.4	15.3	15.2
Scientific and Engineering Calculations	15.8	11.2	9.6	8.5	4.2	2.3	1.4
CAD/CAM/CAE	6.1	5.6	6.4	5.9	6.8	5.2	5.5
Professional Support	3.0	3.7	4.8	5.3	10.8	10.8	9.0
Graphics	2.4	1.9	4.0	4.4	6.3	5.9	3.8
Communications	0.0	0.9	0.4	2.1	3.4	7.2	6.9
Software Development/ Engineering	6.1	2.8	4.0	1.5	2.9	2.3	1.4
Artificial Intelligence/ Expert Systems	0.6	0.5	0.8	0.6	2.6	4.6	21.1
Hardware Development/ Supercomputer/Micros/Etc.	1.8	3.3	7.4	0.0	0.8	3.3	5.2
Robotics	0.0	0.0	0.0	0.0	0.3	0.0	3.5

Source: Research • Technology Management

"They'd see a job still running after two hours and figure it was stuck in a loop, so they'd kill it." Sun's R&D data center still maintains a one-way link with the corporate database in Dallas. At issue, however, is whether the R&D database should be opened up to other Sun units.

"Some people in R&D believe that if there is an error in the data, people outside R&D just won't have the technical background to spot it," says Thompson. That, in essence, seems to be representative of how skittish R&D remains about getting too close to IS.

"Collaborating with IS on a project basis is one thing. Dealing with IS on a day-to-day basis, when they control how many cycles are available to you, is quite another," says Amoco's Waller. "Companies that have the most successful use of computers in R&D are those that have retained control of their computing."

Gap Between IS and R&D Closes Slowly

For the companies that have made impressive progress in closing the gap between IS and scientific research systems, the process has been slow.

E.I. du Pont de Nemours & Co. has always had three different computer sectors: an Information Systems Div. (ISD); a Scientific and Technical Computing Div.; and Engineering Computing, which oversees process automation and controls. Since 1985, all three sectors have reported to the vp of technology.

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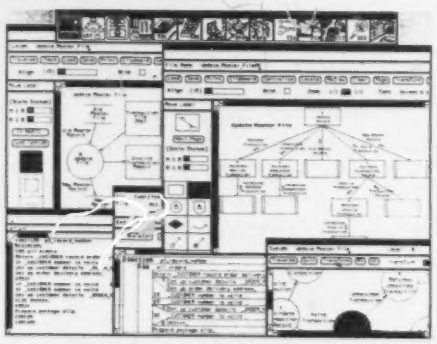

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In Search of Synergy

Ray Cairns, head of ISD, was architect of the arrangement that merged the three computing sectors. As part of that effort, Cairns undertook to limit the diversity of computer architectures within the company, an effort that was only moderately successful in the early days, recalls John Taylor, manager of Du Pont's scientific computing.

"Within ISD, Cairns was able to limit systems to IBM/370, DEC VAX, and HP 3000. He was not able to make it stick in the other sectors, nor did he try too hard," says Taylor. "I think it was because he [Cairns] was good at facilitating, not dictating, that we've been able to make the transition to a new era of cooperation."

Maturity of an integrated R&D and commercial IS may also be a factor, he notes, for it is within the past three to five years that "a lot of synergistic activity has begun to develop."

Taylor cites an example of that recent cooperation: "Two years ago, we needed to free up some of our people, so we contracted with ISD to take over support of the All-In-1 [network] system for a fee. Five years ago, we'd have used clubs to keep them out."

For Marion Laboratories, the synergy that is developing between scientific and corporate systems began eight years ago with a technology transfer study with IBM that created a set of requirements for systems in the scientific computing area. As a result, Marion decided to have a separate IS organization in each of the following areas: sales and marketing, manufacturing, and R&D. Each divisional IS director reports to the head of the division, but has dotted-line reporting to corporate IS.

"It enables us to have systems strategies that go across division boundaries," says John Kimbrell, director of R&D Information Systems and Services.

As part of the study, Marion identified the elements of its common corporate architecture: IBM mainframes, databases, and communications software. Each division can have indigenous software and hardware (R&D uses IBM and HP equipment) that need only be able to connect to the IBM mainframe.

Marion, like other companies trying to link R&D and corporate IS, still faces the problem of overcoming a resistance to interdivisional communication. "Each division needs to understand the other's disciplines and needs if you are going to share data in ways that are useful," says Les Clark, vp of information systems at Marion. The company has attempted to solve the problem through task forces to promote what Clark calls "cross-divisional understanding."

For Some, IS–R&D Synergy Is Elusive

While companies such as Du Pont and Marion Labs appear finally to be enjoying the fruits of IS-R&D synergy, other industrial firms are not as advanced.

"I cannot find any synergy between business systems and engineering systems," says Sezer Soylemez, vp of information management at Scientific Atlanta Inc., a maker of video and cable communications equipment. "The overhead of the 370 architecture does not add any value in the engineering world," he says.

However, the company has found opportunities for collaboration between IS and research. Soylemez's information management group recently embarked on a joint project with research to put R&D cost data into a database that is accessible to marketing, engineering, and plant managers. "This is a major step to pull R&D and MIS together," says Steven Ecker, vice president of R&D for Scientific Atlanta. "We need to shorten development cycles and do a much better job of forecasting product development costs."

Mobay Corp., a Pittsburgh chemical firm, recently made its technical computing group a separate unit from IS, added a number of DEC systems, and installed several new applications.

"We perceived we were behind in terms of technical and research computing," says Richard Baker, Mobay's IS director. Baker concedes there's a need for sharing data between research and business systems. Medical materials data running on a DEC system are needed also on the commercial IBM system. For now, data are batched over to IBM "with some difficulty," says Baker.

"It's an area where we'll be looking for stronger links in the future. For now," he says, "we hope that making research and technical computing a separate unit will give it more clout and more freedom to concentrate on its own applications. As a part of IS, it just wasn't getting the support it needed." ■

David Stamps is a Minneapolis-based freelance writer.

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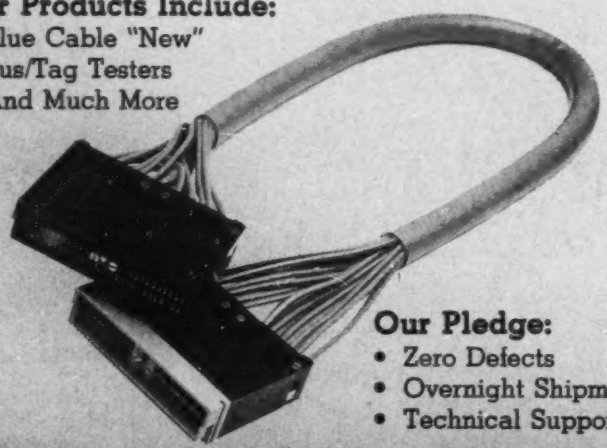

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